REMARKS

The Examiner has rejected Claims 21-23 as unpatentable under 35 U.S.C. 103 over U.S. Patent 6,834,340 to Lee (hereinafter Lee) in view of U.S. Patent Publication 2002/0091807 to Goodman (hereinafter Goodman) in view of U.S. Patent 6665813 to Forsman, et. al. (hereinafter Forsman).

The Examiner has also provisionally rejected all claims under the nonstatutory ground of obviousness-type double patenting over U.S. patent application 09/998,630.

The Provisional Double-Patenting Rejection

The Examiner has provisionally rejected all claims for double-patenting over the related application 09/998,630 in the event that that application should be allowed. Applicant previously indicated that a terminal disclaimer would be filed upon allowance.

Applicant now intends to abandon the related application 09/998,630.

The Amended Claims

Claims 21 and 22 have been amended to clarify that the high speed interconnect and management interconnect are physical interconnect, meaning that they exist as separate interconnect at the hardware level.

Claim 23 has been amended to remove an unnecessary limitation regarding enablement of the high speed interconnect. When a cell provides a firmware update over the manageability system interconnect, the high speed interconnect is not required and may either remain idle or may be used simultaneously for other purposes such as loading or executing an operating system.

The New Claims

New claims 24-26 correspond to former claims 21-23, but have been rewritten to more clearly recite the cellular nature of the machine claimed, and to clarify the level of system to which the present application applies. These claims are slightly clarified from those previously presented in an amendment after final that was not entered by the examiner.

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New claims 27-29 were previously presented as claims 29-31 in an amendment after final in the companion related application 09/998,630. These claims were not entered by the examiner in that case.

The 35 U.S.C. 103 Rejections

The Examiner relied upon Lee for elements of a cellular computer system having management interconnect, high speed interconnect, and a first and second cells each comprising at least one processor, memory, nonvolatile memory, and an interface to the high speed interconnect.

Applicant's claims are drawn to the hardware level of a computer system. Applicant's processors, management processors, memories, nonvolatile memories, and interconnect interfaces are physical functional units implemented in one or more interconnected integrated circuits; these integrated circuits are mounted in a module that is a cell.

Requirements for 35 USC 103 Rejection

MPEP 702.02(j) requires that "the prior art reference (or references when combined) must teach or suggest all the claim limitations" for a 35 USC 103 Rejection to apply (emphasis added). MPEP 2141 further requires that "the claimed invention must be considered as a whole; ... the references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination", and "the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention."

Lee Fails To Provide A Cellular System At Hardware Level

Lee describes three levels of a computer system architecture, a hardware level best illustrated by Lee's FIG 1, providing an environment for a first level virtual-machine having a pool of resources illustrated in Lee's FIG 2, and a partitioned virtual-machine level illustrated in Lee's FIG 3.

At the hardware level, as illustrated in Lee's FIG 1, Lee provides a conventional multiprocessor system with multiple memories accessed over a common

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bus. There is a management processor and management interconnect coupling the management processor to memory, including a single nonvolatile memory.

The second level of Lee, illustrated in Lee's FIG 2, is the level cited by the examiner for the element of cells. Lee's FIG 2 is explicitly described as a "logically partitioned" virtual machine level in Lee's Brief Description of the Drawings. Lee's FIG 2, however, merely shows a puddle having a single nonvolatile memory (Lee 298), several processors (Lee 232-238), several memories (Lee 240-246), and several I/O adapters (Lee 248-262), loosely attached through a firmware "hypervisor" (Lee 212) to "operating systems" (Lee 202-208). This common puddle of resources scarcely resembles Applicant's cellular hardware.

Only at the partitioned virtual-machine level illustrated in Lee's FIG 3 does an association of data structures (Lee 312), interfaces, and "firmware" communicating with "working areas" in system memory appear. No mention of processors or high-speed interconnect is made at this level, so it still does not resemble Applicant's cellular hardware.

The system of Lee is therefore not a cellular system at either the hardware or virtual-machine levels. Even if it were, it fails to disclose separate physical management and high-speed interconnect as claimed (claims 22, 24), or cells each having management processors (claims 24-26)

While Lee uses his management processor to update firmware, his NVRAM is singular. Lee seems to provide en-block firmware update for his entire machine, but does not disclose update of specific firmware associated with specific cells. Further, since his hardware is not cellular, Lee neither discloses using management interconnect to detect errors on cells nor for handshaking between management processors of cells to trigger a firmware update.

Goodman Provides a Limited Cellular System

The system of Goodman provides a cellular system at the hardware level. Goodman provides cells having processors, memory, local bussing, and interfaces to high-speed interconnect. Goodman even provides cell-associated firmware.

The system of Goodman provides many of the elements for which the Examiner cited Lee and which are missing in Lee.

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Goodman fails to provide elements of management processors and management interconnect that are required in the dependent claims 22 and 25, or by independent claim 27.

Goodman's Firmware Update

As stated by the Examiner, Goodman provides for updating firmware of cells to the most recent firmware found on a cell of the system. As admitted by the Examiner, Goodman fails to provide the elements of detection of corrupt firmware, and fails to provide for updating of corrupt firmware with valid firmware.

Applicant notes also that Goodman fails to provide the manageability system interconnect and cellular management processors claimed in all dependent claims.

Forsman

As stated by the Examiner, Forsman (Forsman FIG 2) provides a "service processor" (SP) that has some of the functions of applicant's "management processor" and is coupled to flash memory for storing firmware.

The machine of Forsman is not a cellular machine at any disclosed level. Inspection of Forsman FIG 2 makes this readily apparent. The network of Forsman is not a cellular machine. Forsman therefore is incapable of providing a "fresh" copy found on another cell of the same machine, and thus cannot provide, any error checking on the "fresh" copy. Further, Forsman fails to suggest that each cell of a cellular machine should incorporate management processors, and fails to suggest that management processors should communicate over a separate physical management interconnect.

The Cited Combinations Therefore Lacks Elements of the Claims

As to independent claim 21, the cited combination fails to provide the claimed elements of a first cell containing "machine readable code for recognizing that the firmware in the nonvolatile memory system of the first cell is corrupt and, upon recognizing that the firmware of the first cell is corrupt, for updating the nonvolatile memory system of the first cell with firmware copied from a cell having valid

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firmware;" and a second cell containing "machine readable code for recognizing that the firmware in the nonvolatile memory system of the second cell is valid, and for transmitting the firmware in the nonvolatile memory system of the second cell to the first cell."

As to independent claim 27 and dependent claims 22 - 26, the cited combination taken as a whole fails to provide the claimed elements of hardware (or physical) level management interconnect and cellular management processors

The Dependent Claims

The Examiner relied upon Lee for the element of management interconnect, for the use of this management interconnect in locating valid firmware in a second cell, and for triggering transfer of the valid firmware to the first cell.

As heretofore shown, Lee fails to provide this element because Lee fails to provide cells at the sole level of architecture where his management interconnect exists.

Even were Forsman's network found to be a cellular system, Forsman fails to separate management interconnect from high speed interconnect as only one interconnect is present on his network (Forsman FIG 1). Forsman thus fails to disclose handshaking on a separate management interconnect as claimed.

Goodman also fails to disclose management interconnect as distinct from high speed interconnect.

Dependent claims 23, 23, 25, and 26, and independent claim 27, all reference distinct and separate high speed and management interconnect.

Since the elements of separate high speed and management interconnect are lacking in the cited combination, the cited combination is not valid against these claims under 35 U.S.C. 103.

Conclusions

Since the cited combination lacks many elements of the present claims, Applicant believes that the pending 35 U.S.C. 103 rejection of independent claim 21 as amended has not met the Examiner's burden of both finding the elements of the
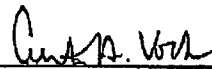
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claimed invention in the art and a suggestion in the art that these elements be combined to produce the invention.

Applicant therefore respectfully requests that the Examiner reconsider the present amended application in view of the foregoing remarks.

The Commissioner is authorized to charge a fee of $790.00 for the Request for Continued Examination and $120.00 for a one month extension of time to deposit Account No. 08-2025. Applicants believe no other fees are currently due, however, if any other fee is deemed necessary in connection with this Amendment and Response, please charge Deposit Account No. 08-2025..

Respectfully submitted,

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